CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory
An ISO 9001:2008 Certified Company
NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/KRIDL/W.No.13/BM/Shape.T/2017-18

09.01.2018

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to Roads and Asphalting at Kuvempu School road and other roads in Mallasandra Ward No.13, in Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/144/2017-18 Dated: 21.12.2017
* Sample ID	:	Hot Mix Plant, Bangalore
Technical Reference	:	IS : 2386(Part -1)-1963 (RA-2011)
* Type of Mix	:	Bituminous Macadam
Date of Testing	:	09.01.2018

Sl.No.	Description	Result
1	Flakiness Index	11.26%
2	Elongation Index	13.09%
3	Combined Flakiness & Elongation Index	24.35%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Macadam is 30%

Note:

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⇒Any Query regarding the report must be reported within 30 days from the date of testing.

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Civil-tech Consultants & Engineers
#23/14, 7th Cross 3rd Stage 4th Block,
Shakthi Ganapathinagar,
Basaveshwaranagar, Bangalore-560 079.

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.
Tele Fax : 23223227, Website : www.civiltechconsultants.com
E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No: CTCE/BBMP/KRIDL/W.No.13/BM/Stripping/2017-18 10.01.2018

TEST REPORT ON STRIPPING VALUE OF ROAD AGGREGATE (STATIC IMMERSION TEST)

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of work	:	Improvements to Roads and Asphalting at Kuvempu School road and other roads in Mallasandra Ward No.13, in Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/144/2017-18 Dated: 21.12.2017
Technical reference	:	IS: 6241
* Type of Mix	:	Bituminous Macadam
Date of Testing	:	10.01.2018

Type of binder : 60/70
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.3	3.40	96.60
2	3.4		
3	3.5		

*Information is furnished by the Customer/Representative.

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Macadam is 95%

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Basaveshwaranagar, Bangalore-560 079.

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Job No: CTCE/BBMP/KRIDL/W.No.13/BM/Sp_Wa/2017-18 10.01.2018

TEST REEPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	:	Improvements to Roads and Asphalting at Kuvempu School road and other roads in Mallasandra Ward No.13, in Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/144/2017-18 Dated: 21.12.2017
Technical reference	:	IS : 2386(Part -3)-1963 (RA-2011)
* Type of Mix	:	Bituminous Macadam
Date of Testing	:	10.01.2018

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 2	
1	Weight of aggregate suspended in water with the basket	W_1 g	2010	2012	2014	
2	Weight of basket suspended in water	W_2 g	750	750	750	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1260	1262	1264	
4	Weight of saturated surface dry aggregate in air	W_3 g	2026	2027	2030	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	766	765	766	
6	Weight of oven dried aggregate	W_4 g	2016	2018	2020	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.632	2.638	2.637	2.634
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.667	2.669	2.672	2.669
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.50%	0.45%	0.50%	0.50%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Macadam is 2.0%

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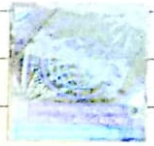
Job No.: CTCE/BBMP/KRIDL/W.No.13/BM/Bitumen/2017-18 10.01.2018

TEST REPORT ON BITUMEN CONTENT DETERMINATION OF BITUMINOUS MACADAM MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of work	:	Improvements to Roads and Asphalting at Kuvempu School road and other roads in Mallasandra Ward No.13, in Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/144/2017-18 Dated: 21.12.2017
* Sample ID	:	Road at Kuvempu School road. Mallasandra in ward no.13,
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	10.01.2018



BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	483.5	481.5
3. Weight of Asphalt and Mineral matter Extracted, g		-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	16.5	18.50
7. Bitumen content in %	3.30	3.70
8. Average	**3.50**	

*Information is furnished by the Customer/Representative.

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Job No.: CTCE/BBMP/KRIDL/W.No.13/BM/Bitumen/2017-18

TEST REPORT ON GRADATION OF BITUMINOUS MACADAM MIX

* Customer	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
* Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
* Name of work	:	Improvements to Roads and Asphalting at Kuvempu School road and other roads in Mallasandra Ward No.13, in Shettyhalli Sub Division, BBMP, Bangalore.
* Reference	:	BBMP/EE/DD/WO/144/2017-18 Dated: 21.12.2017
* Sample ID	:	Road at Kuvempu School road. Mallasandra in ward no.13,
Technical Reference	:	IS:2386 and IRC:SP:11-1984
Date of Testing	:	10.01.2018

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0.00	100	100
19	35.62	7.37	7.37	92.63	90-100
13.2	81.5	16.86	24.22	75.78	56-88
4.75	257.2	53.20	77.42	22.58	16-36
2.36	50.4	10.42	87.84	12.16	4-19
0.3	24.6	5.09	92.93	7.07	2-10
0.075	5.28	1.09	94.02	5.98	0-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0.00	100	100
19	35.62	7.40	7.40	92.60	90-100
13.2	82.4	17.11	24.51	75.49	56-88
4.75	256.2	53.21	77.72	22.28	16-36
2.36	54.2	11.26	88.98	11.02	4-19
0.3	31.28	6.50	95.47	4.53	2-10
0.075	7.25	1.51	96.98	3.02	0-8

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